

## Special Thanks

The U.S. Environmental Protection Agency's Office of Solid Waste would like to thank all of the teachers and students who contributed their thoughts and ideas to the development of this resource in 1998 and 1999. Focus groups with teachers and students were held in Kansas City, Kansas; Alexandria, Virginia; Atlanta, Georgia; and Chattanooga, Tennessee.

We would like to extend special thanks to a group of educators who served as a review panel for this resource during its development. Teachers in kindergarten through sixth grade, as well as curriculum specialists, participated in an Internet-based evaluation group. From May 1999 through July 2000, they electronically reviewed materials under development. The following individuals participated on this panel:

**Linda M. Bates**

Milton Elementary Schools  
Milton, NH

**Ernest T. Boyd**

Prairie Elementary School  
Elk Grove Unified School District  
Elk Grove, CA

**Amy Cabaniss**

Managing Director  
EHS Education, LLC  
Niantic, CT

**August O. Curley**

Historically Black Colleges &  
Universities/Minority Institutions  
Environmental Technology Consortium  
Sclark Atlanta University  
Atlanta, GA

**James L. Elder**

Founding President, The School for Field Studies  
CEO, EarthGate.net, Manchester, MA

**Monica Ellis**

Sunnyside Elementary School  
Metropolitan School District of Lawrence Township  
Indianapolis, IN

**Eric Ferguson**

**Kristin L. Gonja-Larkin**

**Dr. Joe E. Heimlich**

Associate Professor, School of Natural Resources  
The Ohio State University  
Leader, Environmental Science, OSU Extension  
Columbus, OH

**William Hoffman**

Solid Waste Management Department  
City of Albuquerque, NM

**John Lagnese**

Tenney Middle School  
Methuen, MA

**Patricia McGranahan**

**Sherry Middlemis-Brown**

**Wanda Owens**

Teacher of the Functional Mentally Handicapped  
Hopkins Elementary School  
Somerset Independent School System  
Somerset, KY

**Jeri Pollock**

Pepperdine University  
Malibu, CA

**Peter Schmidt**

**Lisa Siegman**

**Harold Siskind**

Town Creek Elementary School  
St. Mary's County Public Schools  
Lexington Park, MD

**Cheryl Stanco**

**Sherry Weinberg**

Technology Coordinator  
Smyser Accelerated School  
Chicago, IL

We regret that school affiliations for several teachers were not available at the time of this printing.

**Disclaimer:** Publication of this document by the U.S. Environmental Protection Agency does not constitute an endorsement of any specific consumer product.

# WELCOME to EPA's Solid Waste Resource for Teachers and Kids in Grades K-6!

## About This Resource

The U.S. Environmental Protection Agency (EPA) designed this solid waste resource as a flexible tool for teachers of kindergarten through sixth grade. Its multidisciplinary focus includes math, science, art, social studies, language arts, and health. Lessons encourage students to utilize skills ranging from reading and writing to problem-solving and analytical thinking.


Teachers can use this resource as one of many tools in the development of their lesson plans, incorporating a range of its suggested activities and subjects into different educational units throughout the school year. Activities and concepts can be incorporated into existing curricula, or teachers can create special week-long units on the environment and solid waste or use the activities to commemorate Earth Day.

*The Quest for Less* provides hands-on lessons and activities, enrichment ideas, journal writing assignments, and other educational tools related to preventing and reducing trash. Each chapter includes one or more fact sheets providing background information on each topic. In addition, each chapter includes an index showing the grade ranges, subject areas, and skills used for each activity to help teachers select the appropriate activities.

Each activity provides the suggested duration, materials needed, and other helpful information for teachers. A glossary of terms and a glossary of skills can be found at the end of the resource. Covered sequentially, this resource introduces the idea of natural resources as a source for many products that become solid waste; explains the life cycle of products and the quantity and type of waste they produce; and

## Goals of This Resource

- To stimulate young people to think critically about their own actions and the results of their actions and to assess their own resource conservation and waste prevention values.
- To help young people understand the connections among the use of natural resources, use of products, waste disposal, and causes and effects of environmental impacts.
- To help students understand the hierarchy of preferred waste management options and students' role in the different options (e.g., reduce, reuse, and recycle before disposal).
- To introduce and explain behaviors that conserve resources, reduce environmental impacts, and enhance sustainability such as source reduction, recycling, buying recycled, buying with less packaging, and composting.
- To help protect children's health through increased awareness and behavioral changes related to the safe use, storage, and disposal of household products containing hazardous constituents, such as cleaners, pesticides, and batteries.
- To make solid waste education interesting, fun, and an integral part of environmental education.
- To help students understand the concept of personal responsibility toward the environment and to inspire them to make a positive environmental impact in their home, school, and community.



reviews the common methods of managing solid waste, including recycling, composting, landfilling, incinerating, and preventing waste in the first place. It also includes some information about hazardous waste.

## Why Should Kids Learn About Garbage?

Despite the fact that individuals and communities are recycling more than ever, each person in the United States continues to generate about 4.5 pounds (EPA, 1998) of municipal solid waste per day! This statistic emphasizes the continuing need to teach the next generation about reducing waste and to energize schools and communities to promote environmental awareness.

Because solid waste—or garbage—issues are intimately connected with resource and energy use, global climate change, air pollution, water pollution, and other concerns, lessons and activities in *The Quest for Less* can be incorporated into other environmental or ecological concepts.

## What Is EPA's Office of Solid Waste?

The mission of EPA's Office of Solid Waste is to protect human health and the environment by ensuring responsible national management of hazardous and nonhazardous waste. Close interaction with states, industry, environmental groups, tribes, and the public enables EPA to promote safe and effective waste management. Because everyone contributes to the problems of solid waste, everyone shares responsibility for finding and implementing solutions.

In that spirit of cooperation, EPA reaches out to educators with this resource, enabling them to instill fundamental environmental awareness and values in today's youth and tomorrow's leaders.

Kids can learn the connection between recycling an aluminum can and saving energy. They can learn how their families' purchasing decisions impact what manufacturers produce and sell. And they can learn how the consumption of material goods contributes to air and water pollution. Recognizing that educators have a unique opportunity to shape students' environmental attitudes, EPA's Office of Solid Waste created this resource to equip teachers with facts and ideas for use in the classroom.

## Sources

In developing this resource, EPA used the North American Association for Environmental Education's (NAAEE's) *Guidelines for Excellence in Environmental Education Materials* as a guiding principle. NAAEE's guidelines address educational standards for fairness and accuracy, depth, skills building, action orientation, instructional soundness, and usability. Information about the organization can be obtained by contacting NAAEE at P.O. Box 400, Troy, Ohio 45373 or calling 937 676-2514.

Facts presented throughout this resource derive from a variety of governmental, educational, and trade association sources. While all have been evaluated by EPA, they have not been independently verified and might become out of date over time or with changes in the solid waste industry or individual/community behaviors. Some facts are specifically attributed to EPA's *Environmental Fact Sheet: Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 1998*, published April 2000 (document # EPA530-F00-024).

This document updates and replaces OSW's previous solid waste teacher's guide, *Let's Reduce and Recycle: Curriculum for Solid Waste Awareness*, August 1990 (EPA530-SW-90-005). Some activity ideas were based on existing solid waste educational materials. These documents can also serve as excellent sources of additional activities for use in the classroom. EPA credits

the following publications and provides information that might be helpful when ordering resources, when available:

**Air, Land & Water Teachers' Manual**, Illinois Environmental Protection Agency, Office of Public Information, 1021 North Grand Avenue, East, P.O. Box 19276, Springfield, Illinois 62794-9276. To order: Phone: 217 782-3397. No cost.

**A-Way With Waste**, Fourth Edition, Washington State Department of Ecology, Air Quality Program. To order: Department of Ecology, Publications Office, P.O. Box 47600, Olympia, Washington 98504-7600. Phone: 360 407-7472. <ecypub@ecy.wa.gov>. Publication # 97-200.

**Closing the Loop: Integrated Waste Management Activities For School and Home**, K-12, The Institute for Environmental Education and the California Integrated Waste Management Board, 1993. 18544 Haskins Road, Chagrin Falls, Ohio 44023-1823. Phone: 216 543-7303. To order: Public Education and Assistance Section, 8800 Cal Center Drive, Mail State 5, Sacramento, California 95826. Cost: \$15.00.

**"Luscious Layered Landfill" activity**, Delaware Solid Waste Authority. To order: 1128 S. Bradford Street, P.O. Box 455, Dover, Delaware 19903-0455. Phone: 800 404-7080. No cost.

**Environmental Education: Compendium for Integrated Waste Management**, California Department of Education, California Integrated Waste Management Board and California Department of Toxic Substances Control, June 1993. To order: Hotline Coordinator/Public Affairs Office, California Integrated Waste Management Board, 8800 Cal Center Drive, Sacramento, California 95826. <[www.ciwmb.ca.gov/publications/default.asp](http://www.ciwmb.ca.gov/publications/default.asp)>. CIMWB Pub # 502-93-001. No cost.

**Environmental Protection: Native American Lands**, Grades 1-12, Second Edition, The Center for Indian Community Development,

Humboldt State University, Arcata, California 95521. To order: Phone: 707 826-3711.

**Forever Green: A Recycling Education Program for Grade 3**, Fort Howard Corporation, Green Bay, Wisconsin.

**4th R Recycling Curriculum**, San Francisco Recycling Program, 1145 Market Street, Suite 401, San Francisco, California 94103. To order: Phone: 415 554-3400. Cost: \$10.00.

**4Rs Project: A Solid Waste Management Curriculum for Florida Schools**, The Florida Department of Education, July 1990.

**Here Today, Here Tomorrow (Revisited): A Teacher's Guide to Solid Waste Management**, State of New Jersey Department of Environmental Protection and Energy, Information Resource Center, 432 E. State Street, CN 409, Trenton, New Jersey 08625. No longer available.

**LifeLab Science Program Web site**, Santa Cruz, California, <<http://www.lifelab.org>>.

**Mister Rogers: Activities for Young Children About the Environment and Recycling**, Family Communications, Inc., 1990. To order: Keep America Beautiful, Inc., 9 W. Broad Street, Stamford, Connecticut 06902. Phone: 203 323-8987.

**Mystery of the Cast Off Caper: 4-H Solid Waste Leader's Curriculum Guide**, North Carolina Cooperative Extension Service, 1992. To order: Contact your local Extension Service Center.

**Nature's Recyclers Activity Guide**, Wisconsin Department of Natural Resources, 1991. Bureaus and Solid Waste and Information and Education, P.O. Box 7921, Madison, Wisconsin 53707. To order: Phone: 608 267-0539 or <[www.dnr.state.wi.us/org/aw/wm/publications/recycle/index.htm](http://www.dnr.state.wi.us/org/aw/wm/publications/recycle/index.htm)>.



***Planet Patrol: An Environmental Unit on Solid Waste Solutions for Grades 4-6***, The Procter & Gamble Company, One Procter & Gamble Plaza, Cincinnati, Ohio 45202. To order: Household Hazardous Waste School and Youth Program, 130 Nickerson Street, Suite 100, Seattle, Washington 98109. Phone: 206 263-3082. <haz.waste@metrokc.gov>. TD 779.P55.

***Recycling Study Guide and K-3 Supplement to the Recycling Study Guide***, Wisconsin Department of Natural Resources, 1993, 1990. Bureaus and Solid Waste and Information and Education, P.O. Box 7921, Madison, Wisconsin 53707. To order: Phone: 608 267-0539 or <www.dnr.state.wi.us/org/aw/wm/publications/recycle/>.

***Rethinking Recycling: An Oregon Waste Reduction Curriculum/Teacher Resource Guide***, Oregon Department of Environmental Quality, 1993. To order: Department of Environmental Quality's Solid Waste Policy and Program Development Section, 811 SW Sixth Avenue, Portland, Oregon 97204. 503 229-5913, Phone: 800 452-4011 (in Oregon). Cost: \$6.00.

***The No Waste Anthology: A Teacher's Guide to Environmental Activities K-12***, California Environmental Protection Agency, Department of Toxic Substances Control, 400 P Street, P.O. Box 806, Sacramento, California 95812-0806. To order: Household Hazardous Waste Program, NH Department of Environmental Services, 6 Hazen Drive, P.O. Box 95, Concord, New Hampshire 03302-0095. Phone: 603 271-2047. <hhw@des.state.nh.us>.

***Trash Today, Treasure Tomorrow***, University of New Hampshire Cooperative Extension, 1990. To order: Office of State Planning, 2-1/2 Beacon Street, Concord, New Hampshire 03301-4497. Phone: 603 271-1098. Cost: \$12.50.

---

EPA published ***A Resource Guide of Solid Waste Educational Materials***, January 1998, to help teachers locate a selection of curricula, activity guides, videos, and Internet sites that contain solid waste educational information. It is available free of charge and can be ordered by calling 800 424-9346. Request document number EPA530-B-97-004.

## **Visit the Kids' Page**

EPA continually adds new Internet activities to the Office of Solid Waste "Kids' Page." You'll find an interactive alien expedition to Earth, a crossword puzzle, a coloring book, a comic book, and other games and activities. Check the site periodically for new enrichments for your students.

**[www.epa.gov/osw/kids.htm](http://www.epa.gov/osw/kids.htm)**